A Reformulation of X-Ray Developer, Ansco-30

Being the person that I am, I am never simply satisfied with the ways some things are. Most things can be made better for different purposes that the originals were not designed to do. So it was with the Ansco-30 developer for development of X-Ray Films. (*Note = This formula did not specify for use with the "Green" or the "Blue" types of X-Ray Films available.*)

The original Ansco-30 called for this as a formula:

Water - at 120 Degrees F. ----------750ml.
Metol ---------- 3.5 Grams.
Sodium Sulfite ---------- 60.0 G.
Hydroquinone ---------- 9.0 G.
Sodium Carbonate ---------- 40.0 G.
Potassium Bromide ---------- 2.0 G.
Add Cold water to make a Full 1 liter of Solution.
(Do not dilute - use as is.)

(NO!!!! Do NOT use The Above Formula)

Yeah! Well..... I tried this. The development came in very, VERY quickly. So, I thought that I was doing something wrong. So I tried again - Without changing anything. No Good AGAIN. Over five times I did this same exact formula. I was using the "Tray Process". Absolutely I was getting nothing - Only over developed negatives. I was "spinning my wheels" on doing this - Over and Over. So I quit. That was 2019. And it was "bugging me" about why.

This year, while taking inventory of my film and paper stock, I saw the boxes of X-Ray films I have. I became a little upset about buying this "*crap*" some years ago, when I could have bought good useable paper stock for making paper negatives. (Something that I was very good at doing.) – So..... It was back to my "laboratory" and chemicals.

I worked on this formula for over six months. Nothing even close to getting what I wanted. And exactly - What did I want from this process. I wanted to NOT do the "Tray Development procedure". I wanted to do the "Tank Development Process". AND I wanted a time of over five to six minutes in the developer - thirty seconds in the Stop solution - and fifteen minutes in the Sodium Thiosulfate Permanganate "Fixer" - without removing the films from the tank. One at a time was way too long for over eight negatives by inspection. Besides, I usually have a total of eight to twenty-four negatives per shooting session. (Some folks are content to do one at a time. And for that reason they only capture a very few negatives. That was not in my mind set. I wanted to do a "batch" of negatives at one time - the time of six minutes.

One night, while trying to get some sleep, my brain would not let me relax. This occurs a lot when I have a design problem. Any design - or in this case - a chemical formulation problem. (Same thing really.) So. I got my butt out of bed, back into the "lab", and got out my photographic chemistry books. Dawn came, coffee was made, milk over oatmeal was poured, and still I was totally awake. I finely got some sleep after thirty-six hours of reading over and other the same books.

I used the back yard for my exposure tests. I knew that the ISO was correct for the use of Fuji "Green" X-Ray film. That being ISO-50. (Some photographers that use this film make use of ISO-100.) I was getting some not too bad negatives at ISO-100, however, I lowered it to ISO-50. The development was coming in well - but not good - at thirty seconds to one minute, by inspection. Still way too short of a time I wanted. And the negatives looked a little "foggy" to me. The days turned into weeks with very little progress. I'll tell you truly - If I ever have to take another photograph of the back yard, it will be way too soon.

Then, about one week ago (November tenth, 2022) I was trying to go to sleep, and it came to me. I had been mulling the dilution over and over in my mind. I tried 1:5 = too strong.... I did a 1:8 = still too strong. I did a 1:10 = some progress. The 1:14 was seemingly getting close - but again the fogginess was becoming a problem. Laying in bed - very much awake, I thought that I might be "working over" this formula from the wrong end. I thought - Why not do some "readjustments" of the raw chemicals AND the dilutions? (I did go to sleep after that thought.)

The next day I dumped all of the dilutions (three gallons in total) - I go in the "lab" and began to readjust the chemical components. With the understanding that the Metol and the Hydroquinone are the developing agents I did my adjustments to those first, but only slightly. Also the Sodium Sulfite, the Sodium Carbonate, and the Potassium Bromide. Here is what I now had:

Water - at 120 Degrees F. ----------750ml.
Metol ---------- 3.0 Grams. (Reduced)
Sodium Sulfite ---------- 70.0 G. (Increased)
Hydroquinone ---------- 4.0 G. (Reduced)
Sodium Carbonate ---------- 20.0 G. (Reduced)
Potassium Bromide ---------- 5.5 G. (Increased)
Cold water to make a Full 1 liter of Solution. (STOCK solution.)

I would have to figure out the "Working Solution" to have the time of development 5 to 6 minutes for the tank.

Another two damn days of shooting the back yard..... :-((

I skipped the ratios of 1:2 - 1:5 - and 1:8. I began the dilutions at a 1:10. Good Progress is now achieved, as I was now getting something close. At the 1:14 the outcome was that of a fair to good density negative in the time of 3 minutes. Not five or six..... However this was progress I could deal with. Taking in all of the failures, from my learning process, and reading over all my notes, cuss words, and mistakes, I went for BROKE..... for a 1:24 ration for Tray development was 5 minutes at a temp. of 70F. (That I figure to 6 minutes at temp. of 65F.)

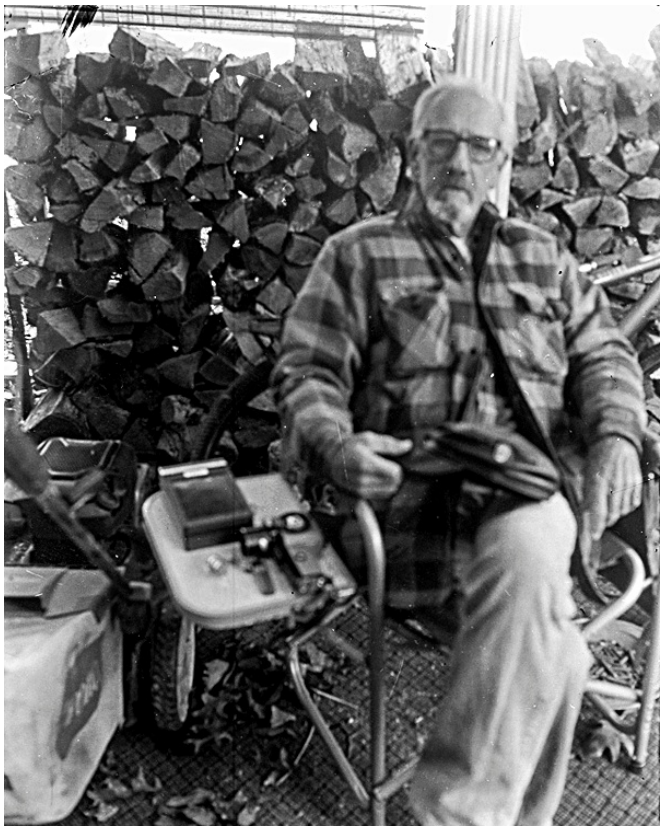
I did another dilution of the ratio of 1:24 - for 1.6 liters. I then loaded the tank with twelve "back yard" negatives and poured in the developer - started the countdown timer - and waited. After the time was up, I dumped the developer, added the Stop. Then the Fixer. After about 20 minutes, dumped the Fixer and turned on the cold tap to wash the negatives that I hoped would be good. (*Because this film is double sided emulsion it tens to drive the developer and Fixer NUTZ*.)

In the time that I was waiting, my mind was going at full speed as to just what would I find. I knew that with all the configuring combinations of chemicals there might be as much as 100 to 300 different ways and only ONE would really do it. I turned off the tap, and opened the lid of the tank, and took out the "separator basket". Then to the "dry line" over the bathtub. (*Yes, my "Laboratory / Darkroom" is my lavatory - i.e. spare bathroom*).

What I saw was not only good negatives - These were as near to perfect as I would want. After drying I scanned them and made proof positives. (*I did not do that with the other negatives, because they were just plan crap.*)

Fuji "Green" - ISO-50
Dev = Ansco-30 / 1:30 / 6 Min.
Readjusted Formula

Fuji "Green" - ISO-50
Dev = Ansco-30 / 1:24
Readjusted Formula



These are the first two that came from the tank. All the others look the same. I want to refine this formula a little more to have it just right for a total of Six Minutes, perhaps a little more. It is good now. However - as I stated in the first paragraph of this article - I want "***a little more/better yet***".

So -

Given this "new" information from the experiments conducted thus so far. I am of the thought that perhaps the times of the development can be as short as SIX minutes and as long as TEN minutes. This, of course, is dependent on the temperature of the "Ansco-30-JK" developer. I will do more and better refined experiments to compile a "Fact Sheet" to accompany the written formula that now has been a "readjusted" so others may use the "Tank Development" and not have to do a tray - One-At-A-Time.

I shall write a more defined article about the further experiments that I shall do with this formula as they develop. (Pun Intended.)

UPDATE- 12-18-2022.....

Breakthrough.. I Did another test of the “Reformulated” Ansco-30 X-Ray Developer.... (“I have renamed it as:

“Ansco-30-JK X-Ray Developer”).

Please Note to use a development time of 7 to 8 minutes for “In-Tank Development. Here are some of the results showing the unaltered scanned Negatives and the edited Positives.

Fuji X-Ray Film - ISO= 50
Toyo 4X5 / 215mm - f-6.3
f-11 @ 1/10 Sec. No Filter
Dev. Ansco-30-JK / 1:24
Reg Stop & Fixer

Fuji X-Ray Film - ISO= 50
Toyo 4X5 / 215mm - f-6.3
f-6.3 @ 1/25 Sec. No Filter
Dev. Ansco-30-JK / 1:24
Reg Stop & Fixer

Fuji X-Ray Film - ISO= 50
Toyo 4X5 / 215mm - f-6.3
f-16 @ 1/5 Sec. No Filter
Dev. Ansco-30-JK / 1:24
Reg Stop & Fixer

As stated before - some photographers are content to “Tray Development” for one at a time. And that is good - however - As I capture over 8 to 12 and more images on a single shoot, I found that very time consuming. This was the reason to find a ratio of solution that would do “TANK Development”, of 12 negatives at a time of 5 to 8 minutes. This now has been achieved. By the reformulation and the readjusted ratio of 1:24 (i.e. 1 Part STOCK Developer to 24 Parts of Water = for the “Working Solution”.

As with about anything that I do, I endeavor to make anything to my liking and as to a better end result of my Photographic Artwork. If you want to give this a try, and find that you can make it better = By All Means Do So - Make your own formulas for your artwork. Be proud of what you can do with what you have. There is absolutely nothing stopping you but yourself. If you say - “I do not know Chemistry, so I can’t do that.” I say to you – READ, take notes (In a Hand Written Notebook), READ MORE, Experiment, Make More Notes.

A very good book for the Chemical Photographic Experimenter is Steve Anchell’s ***“The Darkroom Cookbook”***. Do not have a copy? = Get one.

Another is a book written for anyone to understand the chemical process is by, **Dr. C.E. Kenneth Mees** = ***“The Fundamentals of Photography”***, 1921 edition. (*NO! The book is NOT out of date with the times.*)

There are many other written works that go into great detail on the chemical process, however, most are difficult to understand for the curious photographer. Unless you have studied chemistry in some Higher Educational Institution. For the “Everyday Person”... The two books shown above will do very well. Along with your notebook you will succeed in making your photographic artwork not only better - you shall make it YOUR VERY OWN.

Thank you for the reading --

James R. Kyle, Saint Louis, Missouri, U.S. of A.

12-11-2022